

ABSTRACT

In one embodiment, a method determines the spectral content of an optical signal. Specifically, the optical signal and an optical local oscillator (LO) signal are provided to inputs of an optical hybrid (e.g., an NxN optical coupler where N is greater than two). The phase-diverse components from the optical hybrid are photodetected allowing for mixing of the optical signal and the optical local oscillator. Bandpass filtering is performed to eliminate or reduce relative intensity noise (RIN). The filtered signals are mixed with an electrical LO signal. A quadrature representation of a phase-diverse heterodyne signal is generated from signals from the mixing. The negative image and the positive image from the quadrature representation are separated. The spectral content of the optical signal is determined from the images.